Pavel Rehak

(early days)

My contacts with Pavel

- **Common path during early days.**

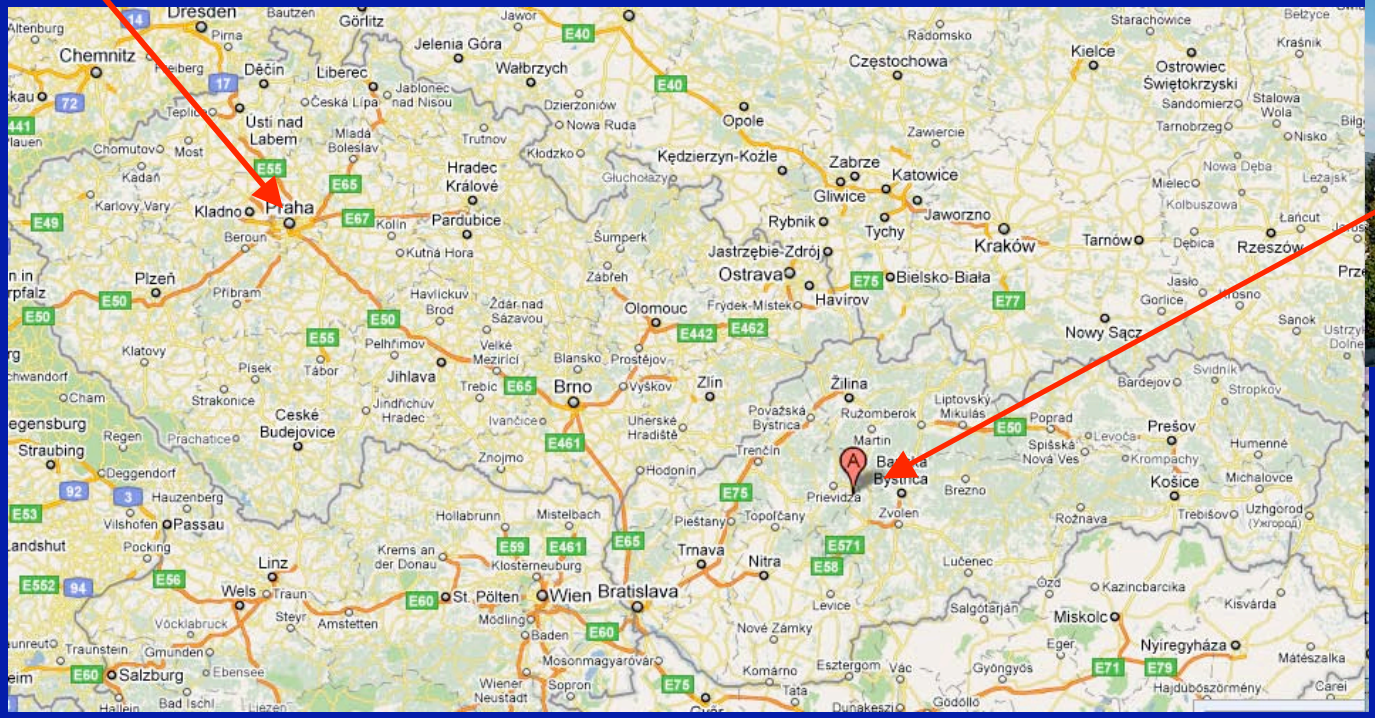
  - Pavel was born in Prague on Dec.5, 1945. The same year as me.
  - We both went to the same University in Prague, but he finished 1 year later. This was because he went to a 4-year middle technical school, and I went to a 3-year gymnasium.
  - Therefore we were not directly classmates, although I remember him.
  - I contacted a lot of people to get the correct information for this talk:
    (I am obliged to many people, namely: J. Hladky, J. Kvitek, D. Venos, K. Zikes, A. Valkarova, P. Oblozinsky, etc.)

- **Professional contacts in US.**

  - Conferences, workshops, etc.

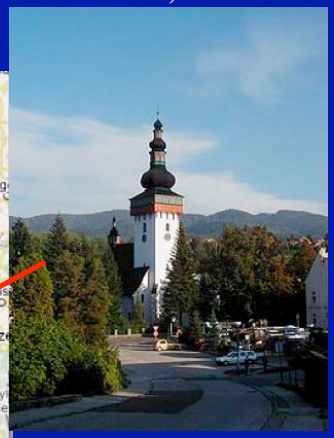
Pavel's origins

Born in Prague:



His childhood:

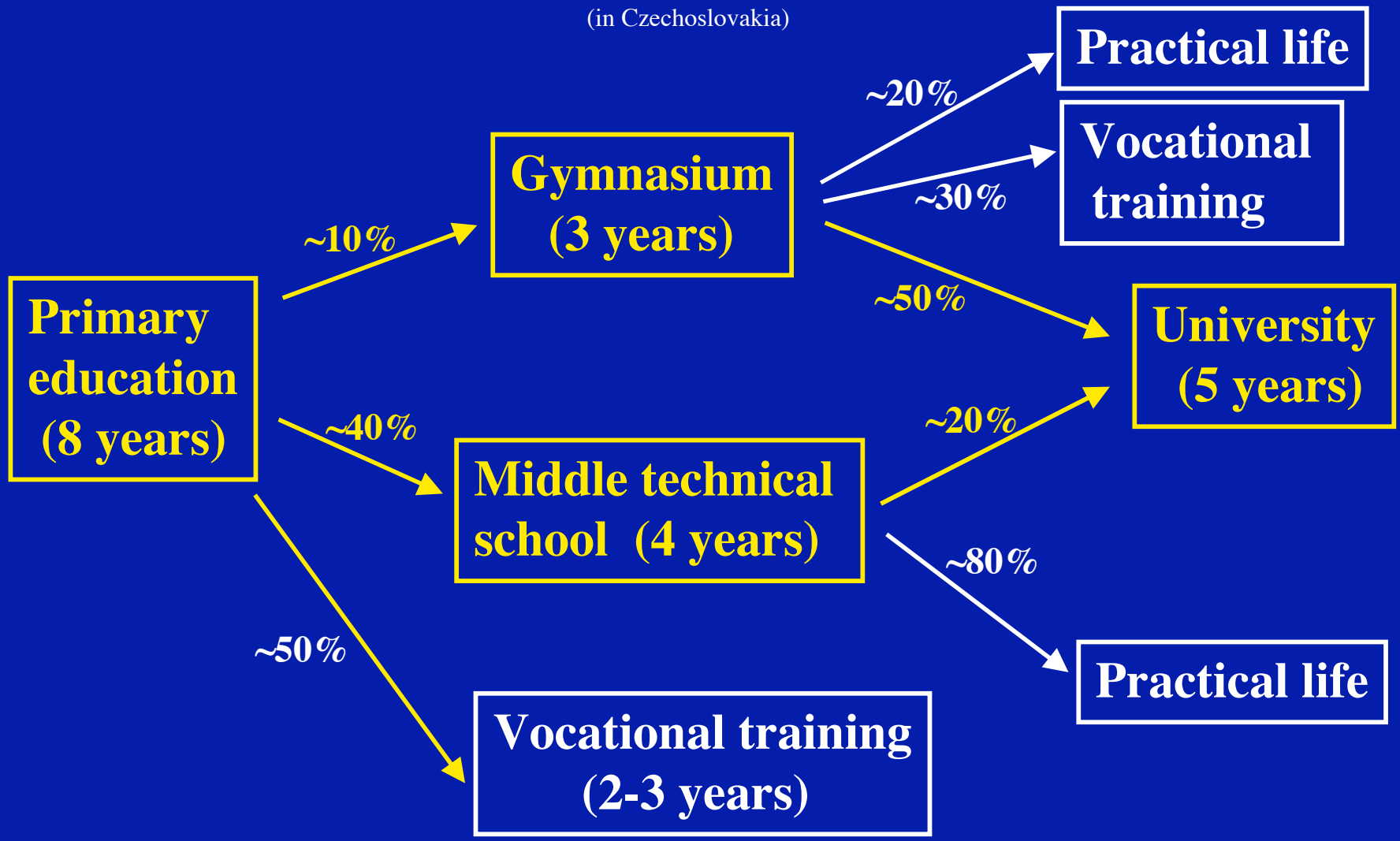
Handlova, Slovakia



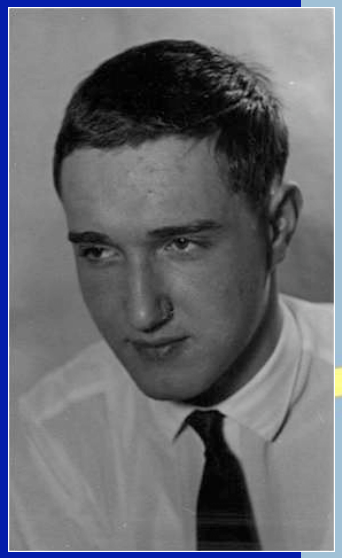
- **His family came from Slovakia. His father was a doctor (surgeon) in Handlova. Because the hospital was damaged during the war, his father went with entire family to Prague, where Pavel was born in 1945. In 1948 his family goes back to Handlova, where his father becomes a director of the hospital, and later a head of the surgical section of the hospital. I am told that he was a very good doctor, as they always brought to him the most difficult cases from disasters in local mines.**
- **Pavel's primary education was in Handlova in Slovak language.**

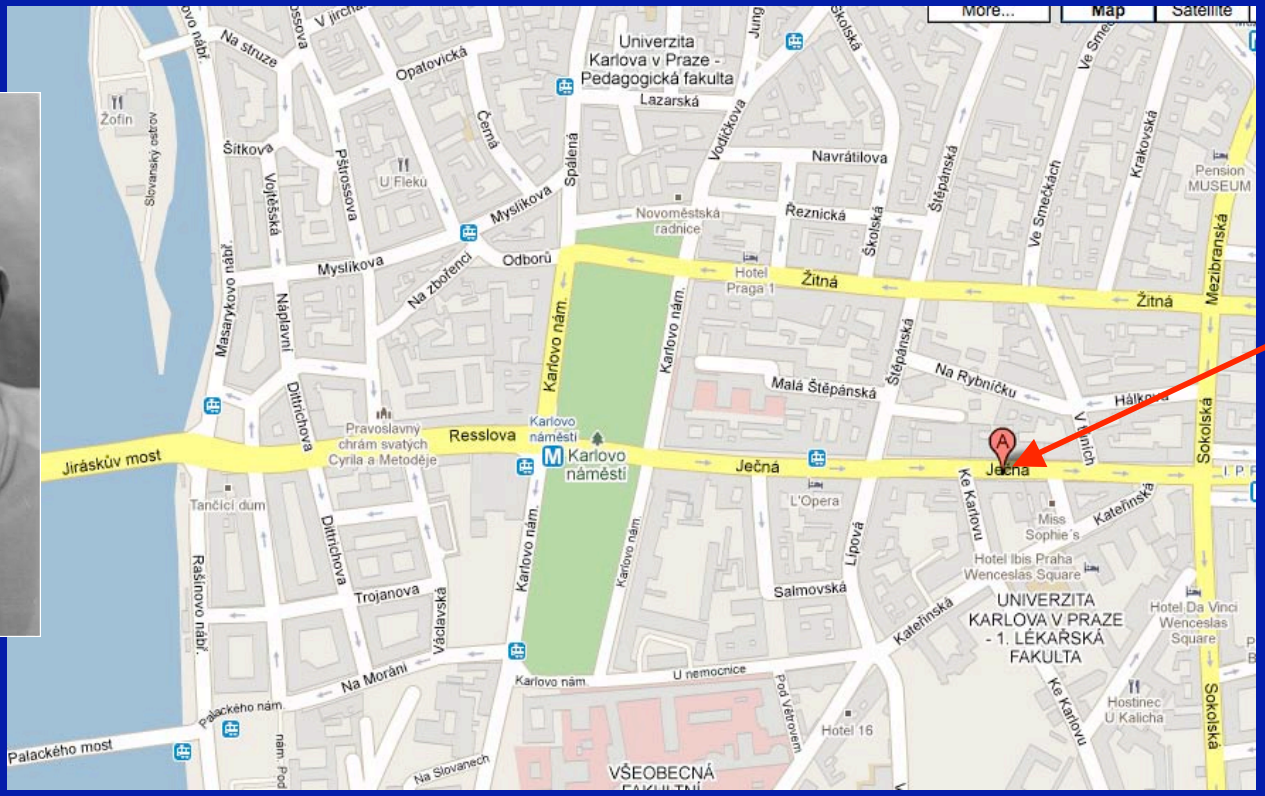
Educational path in 1960's

(in Czechoslovakia)



Middle technical school





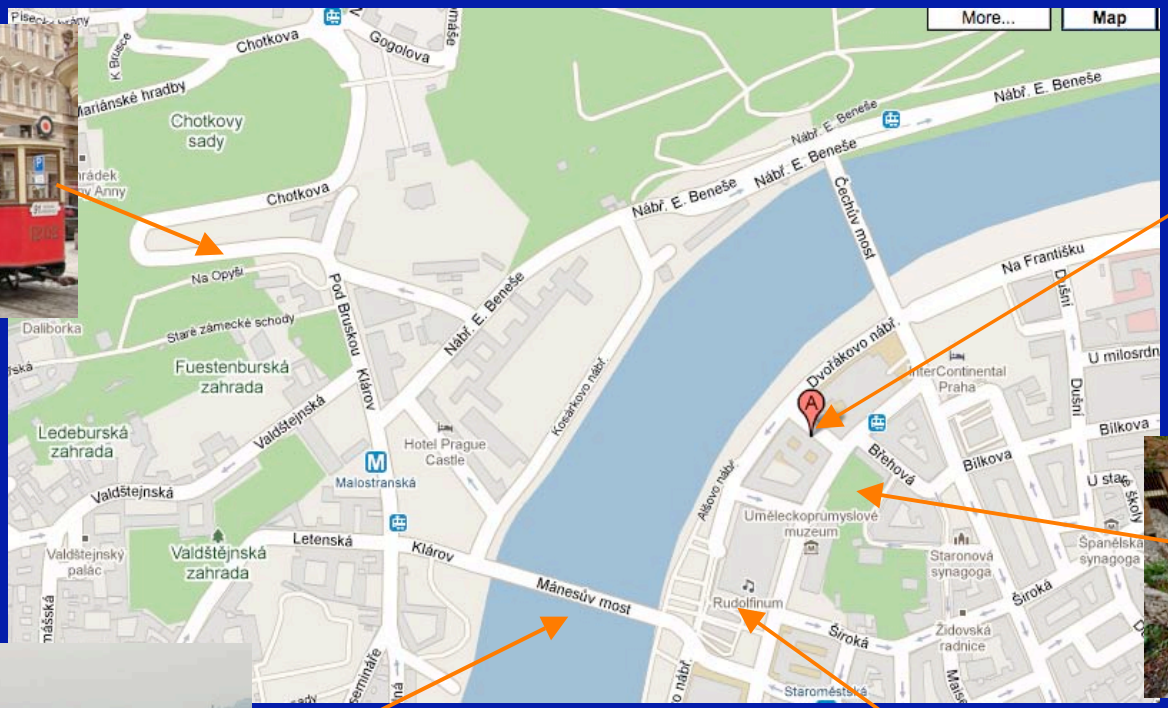
Middle technical school in Jecna street, Prague

- **In 1958, when he was 13, Pavel came back to Prague to study in the middle technical school, specializing in the nuclear technology. This gave him a practical insight.**
- **However, he liked math. He was nicknamed by his fellow students as "integrator" because of his excellence in calculus.**

Faculty of Nuclear physics

1963-68

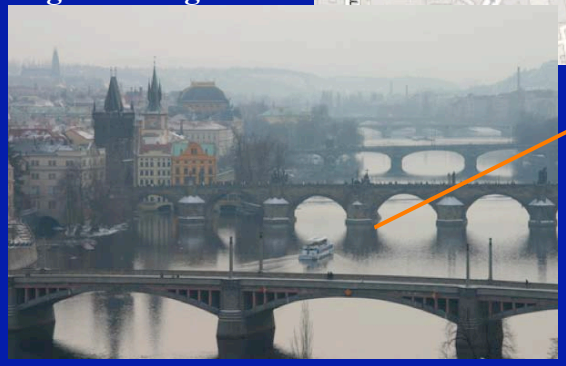
Street trans:



Faculty of nuclear physics:

Old Jewish cemetery:

Prague's bridges:



Rudolfinum:

- **It is great location for tourists now, but we certainly did not notice this at that time.**
- **Pavel was 18 when he started this school.**

School curriculum

1962-68

- **1-st year:**

  Basic math I & II, geometry

  Basic physics I & II, lab I & II
- **2-nd year:**

  Basic math III & IV

  Basic physics III & IV, lab III & IV
- **3-rd year:**

  Math: Complex variables

  Physics: Theory of relativity, Electromagnetic field, Quantum mechanics I, Nuclear physics
- **4-th year:**

  Math: Special functions

  Physics: Quantum mechanics II, Neutron & reactor physics, Theory of nucleus
- **5-the year: Diploma work** (lasted a year; usually one would work in a special work place, such as Academy of sciences, or Institute of Nuclear research, etc; at this point one would learn to work with computers)

Faculty of Nuclear physics at Prague

(1962)

L. Apfelbeck:

- **To make it through the school we had to pass his four math exams.**
- **For us, at that time, the Universe was rotating around him.**

Faculty of Nuclear physics at Prague

(1962)

L. Apfelbeck:

His very first sentence to us during the very 1-st lecture:

“ There is so much of you like steer manure…”

- **To make it through the school we had to pass his four math exams.**
- **For us, at that time, the Universe was rotating around him.**

Summer 1967:Compulsory military service

- **Compulsory 2 month-long military duty.**
- **In addition, at the end of school we had to go for 1 year to the army.**
- **Note: The last time the Czech armies really fought was in 1615…**

Pavel's diploma work

- In Pavel's 4-th year of the school, prof. Petrzilka suggested that there are 5 positions in Dubna to finish the diploma work there.
- Pavel applied and went to Dubna in 1967.
- Diploma work, which is equivalent to a Ms.C. thesis, usually lasted a year. It required some real work, either experimental or calculation using the computers, which started to appear at that time. One usually did not have much freedom to choose the subject, it was given to you. Then one would have to write it up and defend the work in front of a committee, usually consisting of 3-4 people.

His stay in Russia in 1967-68

Party in Dubna:
(1967)

- **In Dubna, during the early work he was almost severely injured by an explosion of a high pressure detector. Pavel was leaning over it at that point. Luckily, nothing happened to him. Apparently, if I understand it correctly, they used a bottle without a pressure regulator.**
- **He worked in a neutron physics group.**

Diploma work: (n, He^4) reaction on Mo^{95}, Te^{123}, Pd^{105} and Xe^{129} nuclei in the regions of resonances

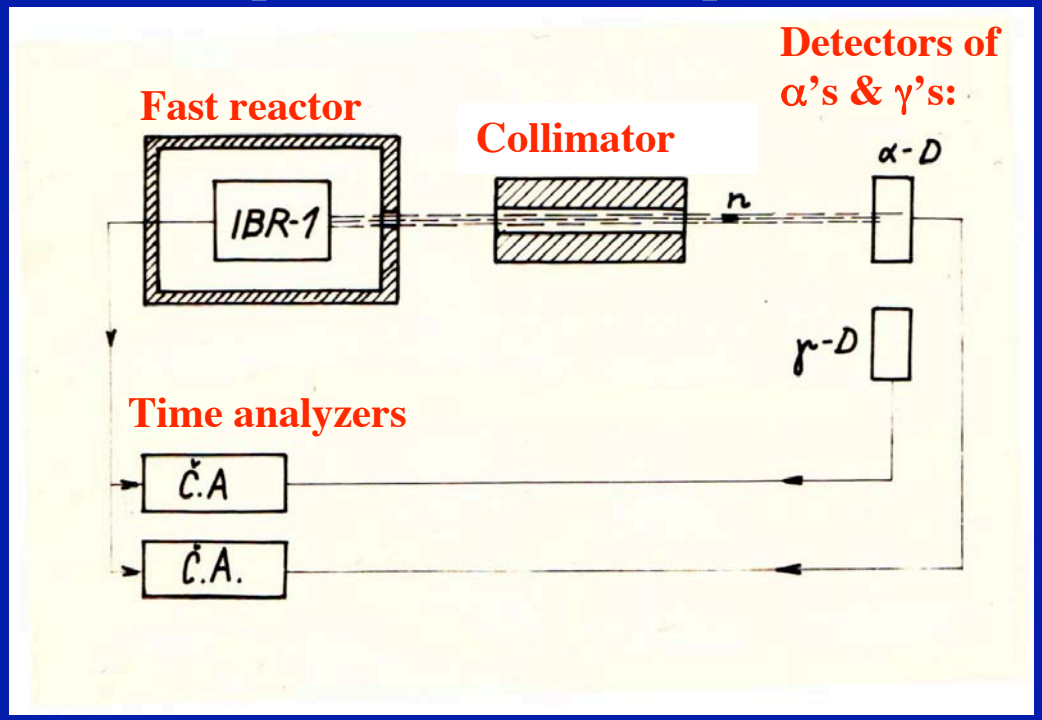
Diploma work leader: M. Florek & help during final stages of writing: J. Kvitek

- Goal of the work, as Pavel says in the introduction:

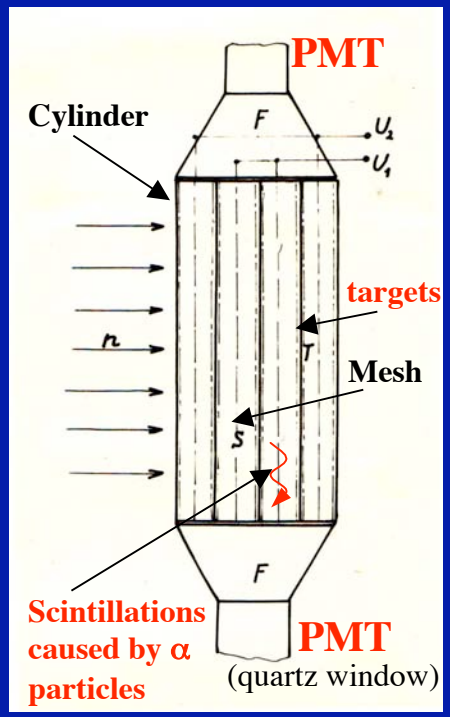
- Study (n,α) interactions on isotops of Mo^{95}, Te^{123}, Pd^{105} and Xe^{129} in the resonance region.
- Improvement of detector parameters to allow a detection of such reactions.
- To simulate proces of a passage of charged particles through the matter.

Diploma work: Xe-filled gaseous scintillation detector

Principle of detection setup:



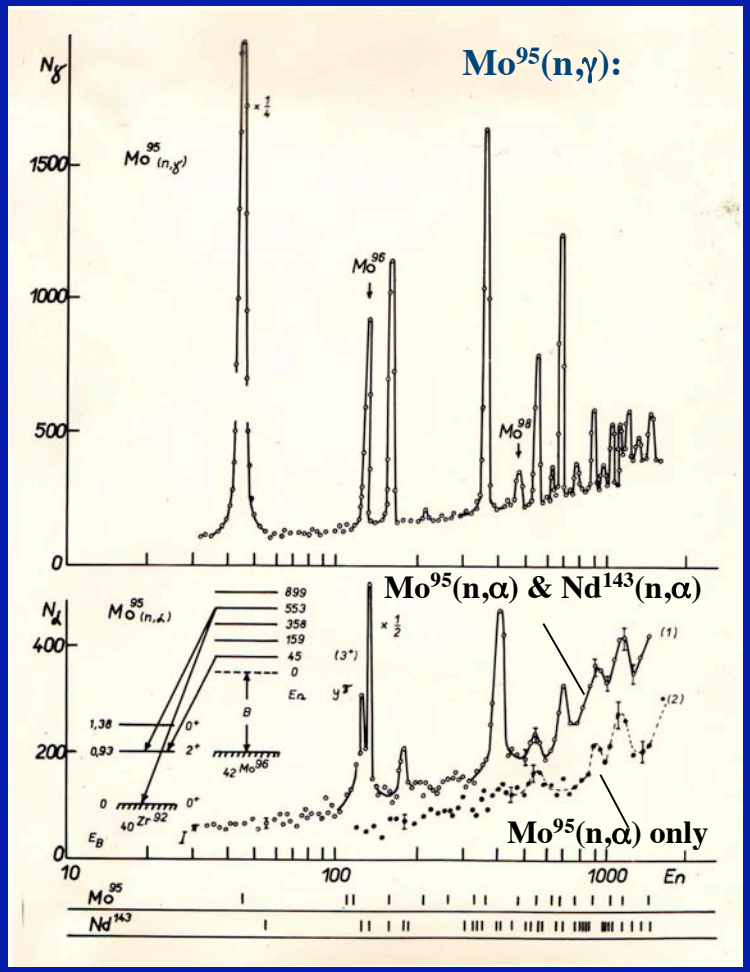
Scintillation gaseous detector:



- **A given isotope under study was deposited on target plates as thin films. The α-particles, produced in the (n,α) reactions, created scintillations in a pure Xe-gas, which were then detected by PMTs with quartz window.**
- **To improve a reflectivity they covered the target plates with a thin Al film.**
- **Mesh was used to control the electric field, which influences the photon yield.**

Result of the diploma work

Final data:



- **This work gave Pavel a pretty good experience in the detector physics very early in his life, which undoubtedly led to his excellence in the detector physics later on.**

The 1968 invasion of Czechoslovakia

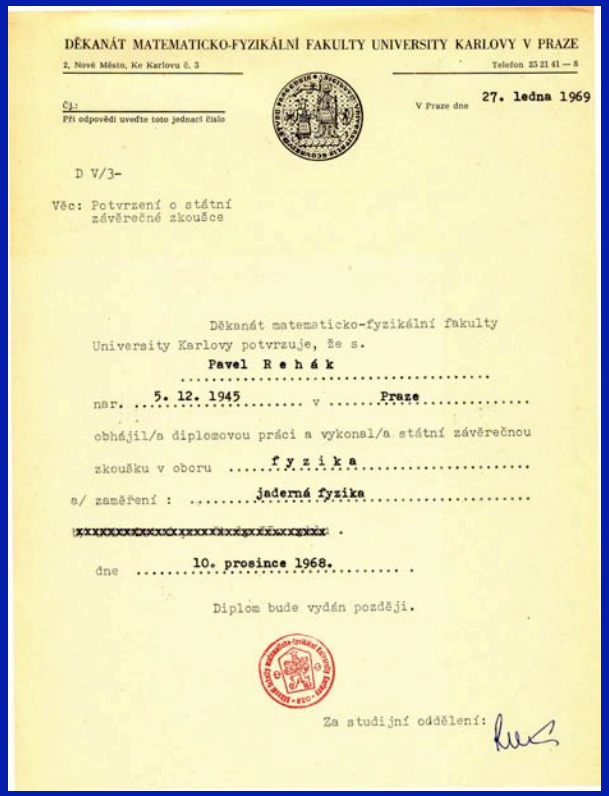
August 1968:

Russian solders from 1968 in front of their tank from 1945:

- **After the invasion of Czechoslovakia by Russian troops in 1968, Pavel returned from Dubna to Prague in protest, and finished his diploma work in Prague. He was told that two more weeks and it would be impossible to do it. As prof. Petrzilka said, the "gate" will be closed in 2 weeks.**

Finishing the school

Diplom:



DĚKANÁT MATEMATICKO-FYZIKÁLNÍ FAKULTY UNIVERSITY KARLOVY V PRAZE

2, Nové Město, Ke Karlovu č. 3 — Telefon 23 21 41 — 8

Čj.:
Při odpovědi uveďte toto jednací číslo

V Praze dne 27. ledna 1969

D V/3-

Věc: Potvrzení o státní závěrečné zkoušce

Děkanát matematicko-fyzikální fakulty University Karlovy potvrzuje, že s.

Pavel R e h á k

nar. 5. 12. 1945 v Praze

obhájil/a diplomovou práci a vykonal/a státní závěrečnou zkoušku v oboru f y z i k a

s/ zaměření : jaderná fyzika

dne 10. prosince 1968.

Diplom bude vydán později.

Za studijní oddělení:

- **After finishing the diploma work, and after a brief period of working at the University, Pavel left the country for good. …together with several hundred thousands of others…**
- **The country was being "normalized"… It took ~20 years to liberate it.**

Languages

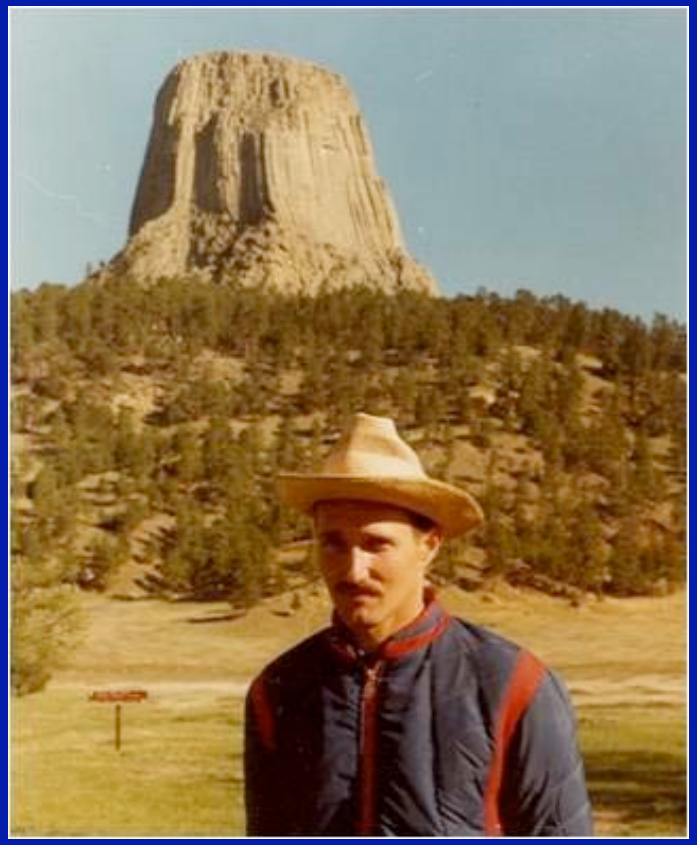
- **Pavel knew 7 languages: Slovak, Czech, English, Russian, French, German and Italian. His mother language was slovak.**
- **Sometimes he would switch from one to the other depending on the argument. One of his slovak friend, P. Oblozinsky, made a comment to Pavel: "Stick to #1 when you talk to me. However, after a while he would switch to #3 or #7, depending what was the subject and where he would learn about it …".**
- **I had a similar experience. He would talk to me in Czech, but occasionally he switched to English.**

Vision

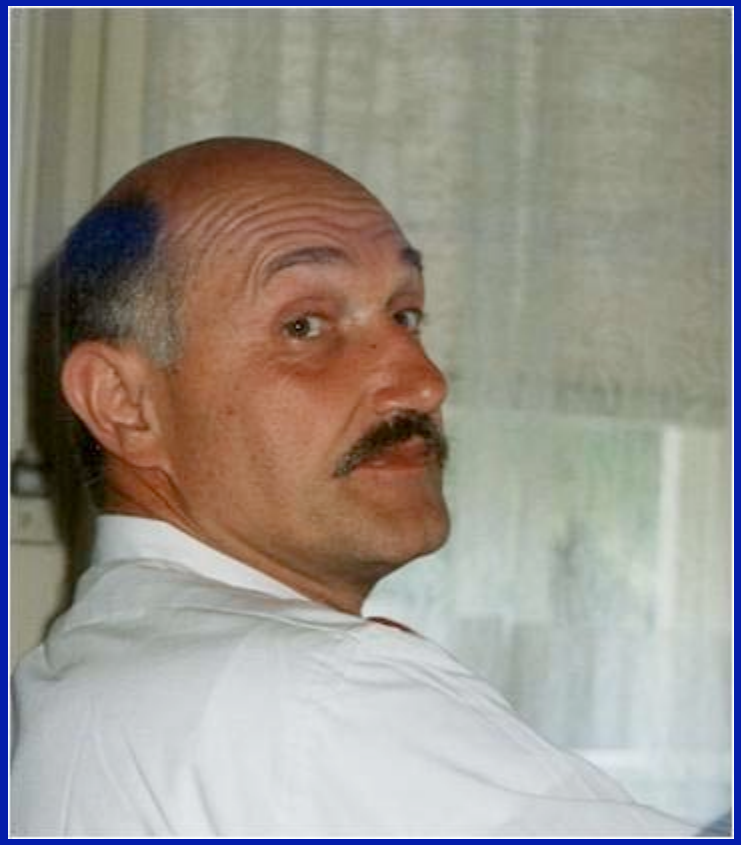
- **V. Radeka wrote in CERN Courier (vol.50. No.1. p.35): "Most of his work was motivated by his belief that detector developments are among the main forces responsible for progress in physics and other natural science."**
- **D. Venos, his fellow student in Dubna (1967), told me: "Pavel already in Dubna, when he was still a student, thought that the detector work is the most important work in physics, which enables new discoveries… Nobody from my class thought that way in those days."**

Some pictures his family sent me

1980's



1994



Last pictures I took going from Elba, 2008

With Silvia Dalla Torre & Stew Smith

Final word

- **His detector curiosity started already during his diploma work.**